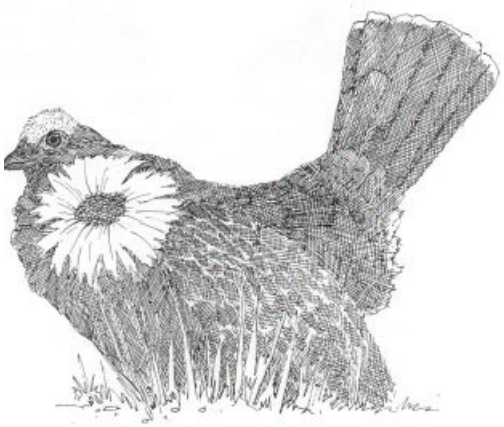

Blue Grouse

Dendragapus obscurus

Last updated: 1998

Written by David A. Ware

GENERAL RANGE AND WASHINGTON DISTRIBUTION

Blue grouse are found throughout western North America, including the offshore islands of British Columbia, Canada. Their range extends from the southern portions of Alaska and the Yukon, south along the Pacific Coast to northern California. The range continues east, encompassing the Cascade and Sierra Nevada mountains of the Pacific Northwest and California, and the northern and central Rocky Mountains from Canada to Arizona (Aldrich 1963, Johnsgard 1973).

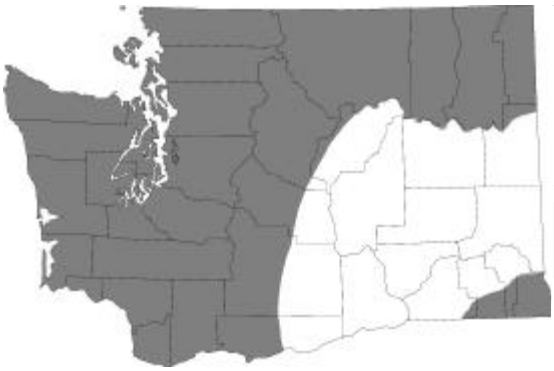

Figure 1. General range of the blue grouse, Dendragapus obscurus, in Washington. Map derived from Washington Department of Fish and Wildlife data files.

In Washington, blue grouse are found in mountainous areas wherever open coniferous forests are present (see Figure 1; Soil Conservation Service 1969). They are closely associated with true fir (*Abies* spp.) and Douglas fir *(Pseudotsuga menziesii*) forests (Johnsgard 1973). Hunter survey results from the 1995 season indicated that blue grouse were harvested from all counties except Adams, Benton, Franklin, Grant, Island, San Juan, and Whitman (Washington Department of Fish and Wildlife 1996).

RATIONALE

The blue grouse is a recreationally important species that is vulnerable to habitat loss or degradation.

HABITAT REQUIREMENTS

Blue grouse breed in open foothills and are closely associated with streams, springs, and meadows. Much of the food they require comes from the succulent vegetation that grows in these areas. During spring and summer blue grouse use stream bottoms and areas with gentle slopes (Washington Department of Game 1961). In the fall they migrate to higher elevations where they spend the winter feeding on fir needles (Soil Conservation Service 1969). Large fir trees are a food source for wintering blue grouse and are required for roost sites. Blue grouse exhibit strong site fidelity to their wintering areas (Cade 1984).

Diet

True fir and Douglas fir needles constitute 60% of blue grouse diet west of the Cascade Mountains (Beer 1943). In other areas they are often supplemented with larch (*Larix* spp.) and pine (*Pinus* spp.) needles (Boag 1963). Important forbs and grasses in drier climates include balsamroot (*Balsamorhiza* spp.), buckwheat (*Eriogonum* spp.), dwarf mistletoe (*Phoradendron* spp.), dandelion (*Taraxacum* spp.), false dandelion (*Agoseris* spp.), strawberry (*Fragaria* spp.), clover (*Trifolium* spp.), sedge (*Carex* spp.), daisy or fleabane (*Erigeron* spp.), knotweed (*Polygonum* spp.), manzanita or bearberry (*Arctostaphylos* spp.), huckleberry (*Vaccinium* spp.), pussy toes (*Antennaria* spp.), elderberry fruit (*Sambucus* spp.), hawksbeard (*Crepis* spp.), dock (*Rumex* spp.), starwort (*Stellaria* spp.), and lupine (*Lupinus* spp.) (Beer 1943, Boag 1963). A study on Vancouver Island indicated that 90% of adult blue grouse diets consisted of bracken fern (*Pteridium aquilinum*), willow (*Salix* spp.), Oregon grape (*Berberis* spp.), blackberry (*Rubus* spp.), huckleberry, salal (*Gaultheria* spp.), and cat's ear (*Hypochaeris* spp.) (Johnsgard 1973). Insects are also an important food source, especially for young chicks during their first 10 days of life (Beer 1943).

Breeding Areas

Conifer thickets, their edges, and adjacent clearings are characteristic of high quality breeding habitat for blue grouse. Selective logging and small clearcuts have the potential to produce good blue grouse habitat by creating uneven aged timber stands with numerous 20-60 year-old thickets (Martinka 1972). Nests are usually located near logs or under low tree branches in open timber (Johnsgard 1973). Smith (1990) found that in Idaho, nesting occurs in brushy areas and that sites with tall sagebrush were preferred.

Mussehl (1962) stated that broods use areas with high plant density and diversity and high canopy coverage. Bare ground should be less than 11%, and the average effective height of grass and forbs should be 20 cm (8 in). Grass and forb cover in areas of highest use range from 53-85%. The forb component of high use areas is 11-41%. Typically, broods feed within 90 m (295 ft) of brush/tree cover. As the broods get older, they switch to riparian areas and shrubby vegetation (Mussehl 1962).

LIMITING FACTORS

Reforestation practices that include high density replanting, herbicide application, and fertilization result in rapid tree canopy closure which reduces blue grouse use (Bendell and Elliott 1967, Zwickel and Bendell 1985). In drier areas, intense grazing of open lowland forests reduces the quality and availability of breeding habitat (Mussehl 1962, Seaburg 1966, Zwickel 1972).

MANAGEMENT RECOMMENDATIONS

Streams, springs, and wet meadows should be safeguarded from potential damage due to livestock grazing and logging operations. Lush vegetation, shrubs, and deciduous trees associated with such areas should be retained for blue grouse brooding and feeding habitat. Grazing should be managed for maximum forb production. The grazing intensity should be light enough to allow grass/forb vegetation to reach a standing height of 20 cm (8 in) (Mussehl 1962, Seaburg 1966). Preferred brooding areas for blue grouse include grass and forb communities that are up to 30 cm (12 in) high. Moderate grazing from May through August or grazing deferred until after 1 August, preserves nesting, brooding, and feeding cover (Soil Conservation Service 1969). Heavy grazing on lower slopes can be deleterious to blue grouse habitat (Johnsgard 1973).

Reforestation activities should address the needs of blue grouse. Succession is naturally rapid, but it is accelerated by dense plantings of Douglas fir. Allowing the tops of hills and low-productivity sites to remain unplanted would be beneficial to blue grouse as breeding areas (Johnsgard 1973, Zwickel and Bendell 1985). Forbs should always be included in seed mixes when reseeding forest land and range where blue grouse occur (Seaburg 1966). Mussehl

(1962) showed that blue grouse preferred sites composed of at least 11% forbs. Openings in densely forested areas such as Vancouver Island, Canada, are important to blue grouse. Logging activity and fire in the low to mid-elevations can open up the forest canopy which may improve breeding habitat.

Cade (1984) recommended using clearcuts smaller than 250 m (820 ft) across and leaving at least 40 trees/ha (16 trees/ac) that have a minimum 24 cm (9 in) diameter on wintering areas. Selective cuts or long rotations greater than 60 years are also better for wintering blue grouse than clearcuts (Cade and Hoffman 1990). Winter roost areas should be retained, including mature, mistletoe-laden Douglas fir thickets near ridges (R. McKeel, personal communication; M. Quinn, personal communication).

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KEY POINTS

Habitat Requirements

- Blue grouse use open, low- to mid- elevation forests for breeding areas. They can be found in close association with streams, springs, and meadows.
- Forest openings <250 m (820 ft) best allow for blue grouse movement across them.
- Areas where vegetation is comprised of 11-40% broadleaf plants (forbs) are preferred.
- Rangeland with vegetation averaging 20 cm (8 in) tall provides brood rearing habitat from May through August.
- Broods use areas with high plant density and diversity and high canopy coverage.
- Insects are an important food source for very young chicks (<10 days old).
- Needles from true fir (*Abies* spp.) and Douglas fir (*Pseudotsuga menziesii*) are an important food source.
- Blue grouse winter in true fir and Douglas fir forests at higher elevations.

Management Recommendations

- Streams, springs, and wet meadows should be safeguarded from potential damage due to livestock grazing and logging operations. Lush vegetation, shrubs, and deciduous trees associated with such areas should be retained for blue grouse brooding and feeding habitat.
- Grazing should be light so that an effective height of 20 cm (8 in) for grasses and forbs is maintained from May through August, or grazing should be postponed until after 1 August.
- Timber harvest in areas known to contain wintering or breeding blue grouse should be restricted to selective cutting or clearcuts smaller than 250 m (820 ft).
- At least 40 trees/ha (16/ac) with diameters >24 cm (9 in) should be left standing when timber harvest occurs in areas inhabited by blue grouse.
- Revegetation efforts should aim for a high percentage of forbs and a variety of trees rather than single plantings that include 1 or 2 species.
- Known winter roosts should be retained, including mature Douglas fir thickets near ridges.